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AUTHOR(S):

Setoguchi, Takeshi; Takai, Masanaru; Shigehara, Nobuo

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# A New Ceboïd Primate, Closely Related to *Neosaimiri*, Found in the Upper Red Bed in the La Venta Badlands, Middle Miocene of Colombia, South America

Takeshi SETOGUCHI, Masanaru TAKAI  
*Primate Research Institute, Kyoto University*  
*Inuyama City, Aichi 484, Japan*  
 & Nobuo SHIGEHARA  
*Department of Anatomy, Dokkyo University School of Medicine*  
*Mibu, Tochigi 321-02, Japan*

## INTRODUCTION

The joint expedition for paleontological excavation organized by INGEOMINAS (Instituto Nacional de Investigaciones Geológico-Mineras, Colombia) and Kyoto University (Japan) in 1988 succeeded in discovering right and left rami of mandible of a new ceboïd primate at near the base of the upper red bed in the Tatacoa Desert, known also as the La Venta badlands, in Huila Department, Colombia, South America. The dentition exhibits the close relation with the contemporary *Neosaimiri*, also found in the La Venta badlands, discovered in the 1940's.

After the expedition in 1988, two of us (T.S. and M.T.) could have another chance to visit the same area in the fall of 1989, from where the fossil mentioned was discovered, by the auspices of the Japanese Government, and found additional materials of *Neosaimiri* from the same spot but 5 cm stratigraphically below the level of the fossil found in 1988 within the upper red bed.

The preliminary description of the fossil found in 1988 is given below in attention to the comparison with *Neosaimiri*. The full description of the new material of *Neosaimiri* found in 1989 will be published separately.

## SYSTEMATIC PALEONTOLOGY

Ceboïd Primate, New Genus, Unnamed  
 (Figures 1 & 2)

Specimen: IGM-KU 8801, right and left rami of mandible, with alveoli for incisors which are all missing, C–M<sub>2</sub> on both rami, and alveolus for M<sub>3</sub> on right ramus.

Locality: Masato Site, near Cuzco, 3 km northeast of Villavieja, Huila Department, Colombia (Masato is the nick-name of Mr. Masatoshi Hayakawa who worked for the expedition and found this fossil).

Horizon: Lowest part of the upper red bed. Middle Miocene.

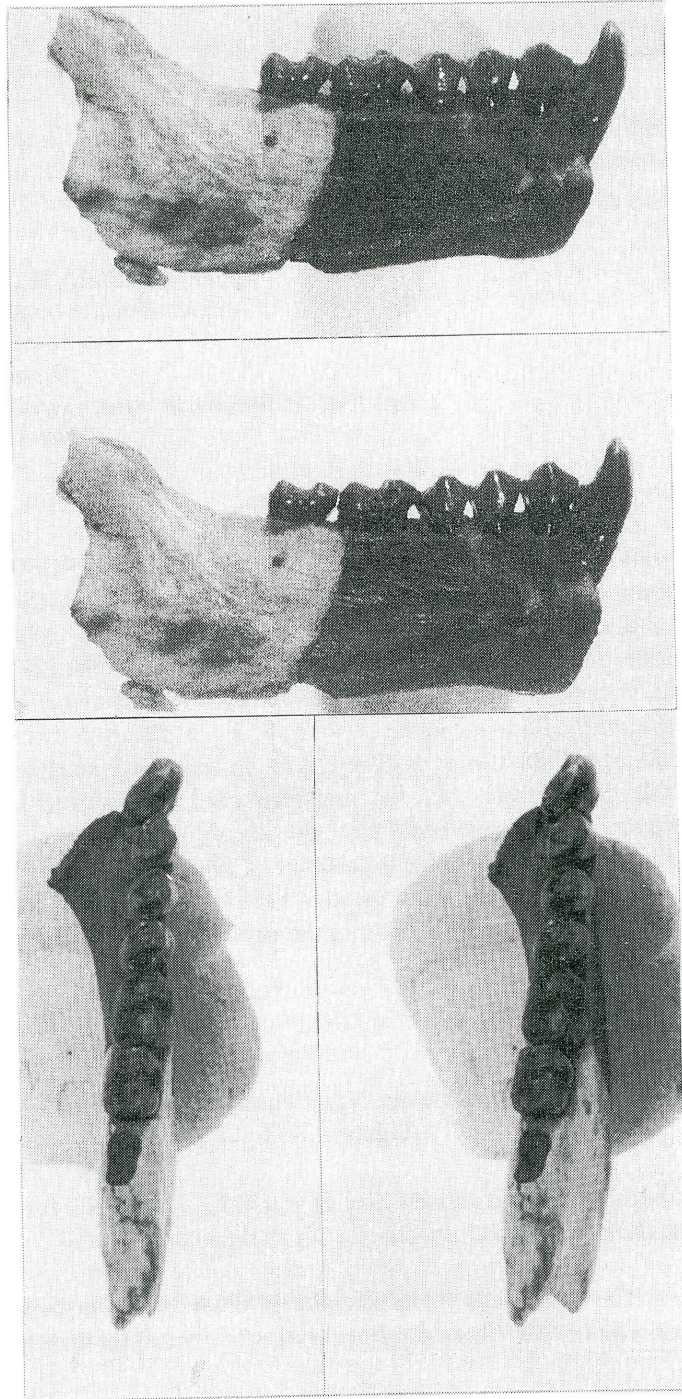


Fig. 1. Ceboïd primate, new genus, unnamed, IGM-KU 8801,  $\times$  about 3, stereo pairs. Top pair: buccal view of the right ramus of mandible. Bottom pair: occlusal view of the right dentition.



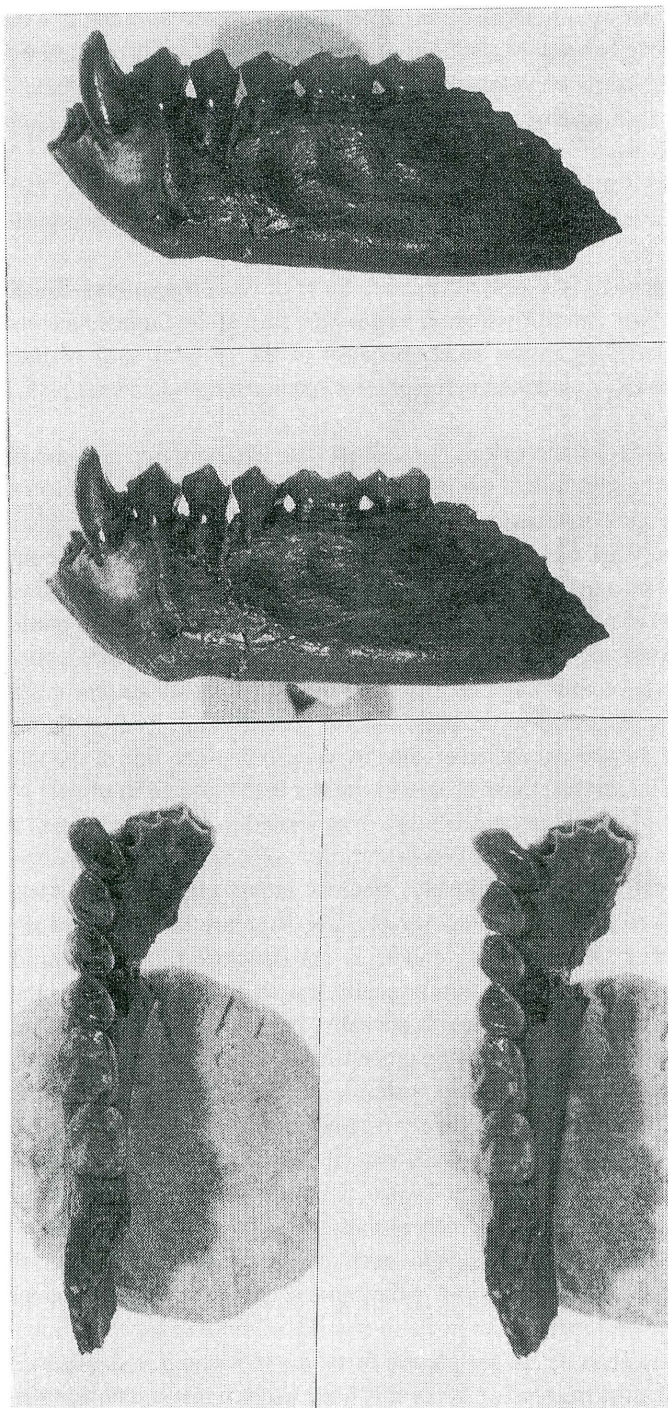


Fig. 2. Cebooid primate, new genus, unnamed, IGM-KU 8801,  $\times$  about 3, stereo pairs. Top pair: buccal view of the left ramus of mandible. Bottom pair: occlusal view of the left dentition.



Description: The size is very close to the contemporary *Neosaimiri* and to extant *Saimiri*. The depth of the mandible beneath  $M_2$  is 7.5 mm. The ventral surface is concaved dorsally beneath  $P_3$  in contrast to the ventral convexity clearly seen in *Aotus*, found in El Dinde, 2 km northwest of Cuzco. The ventral surface beneath  $M_1$  and  $M_2$  of the present specimen is almost horizontal as in *Neosaimiri* and *Saimiri*.

The size of canine is almost same as that of *Neosaimiri*, but the posterior face of the canine-blade is sharply truncated in the former so that the blade is narrower antero-posteriorly than that of *Neosaimiri*.

The size and shape of  $P_2$  is almost identical to those of  $P_2$  of *Neosaimiri*. The metaconid of the former is situated a little anteriorly than in *Neosaimiri* so that the lingual face of the trigonid is a little more constricted than in the latter. Because of the anterior shift of the metaconid, the talonid basin is more clearly marked in the present specimen than in *Neosaimiri*, though it is tiny even in the former.

The size of  $P_3$  is also close to that of *Neosaimiri*. The clear difference in morphology between them is also seen in the structure of the metaconid. The metaconid of the present specimen is bulbous and rather tall, and connected with the protoconid by the thick and straight postprotocristid, whereas in *Neosaimiri* the metaconid is a small cusp and separated from the lingual end of the thin postprotocristid by a notch. On the present specimen, the premetacristid runs anteriorly from the metaconid and continues to run antero-buccally towards the paraconid bordering the lingual face of the trigonid. On the contrary, in *Neosaimiri*, the premetacristid runs rather antero-lingually and turns anteriorly, continuing buccally towards the paraconid so that the trigonid is wider transversely in *Neosaimiri* than in the present form. The trigonid itself is also more constricted antero-posteriorly in the present specimen than in *Neosaimiri*. The size of the talonid basin is the same in both forms; larger than those of  $P_2$  and smaller than those of  $P_4$  of both types.

The anterior shift of the metaconid is more exaggerated in  $P_4$  of the present specimen where the trigonid is more constricted antero-posteriorly and narrower transversely because the premetacristid straightly extends obliquely, whereas in *Neosaimiri* the premetacristid expands lingually making the trigonid wider transversely. The structure of the talonid is also greatly different from each other. Although any conule is not developed on the talonid of the present specimen, the preentocristid runs postero-lingually from the posterior base of the metaconid and turns the direction sharply towards antero-buccally, reaching to the trigonid near the posterior base of the protoconid. On *Neosaimiri*, the preentocristid extends posteriorly rather than postero-lingually, and the buccal extremity of the posterior border of the talonid terminates lingual to the protoconid so that the talonid basin is clearly narrower transversely than in the present specimen. The buccal wall of the tooth in *Neosaimiri* extends buccally towards the base of the crown to form the buccal cingulum. The cingulum is also clearly observable on the buccal side of the cristid obliqua obliqua in the present specimen, although it is tiny and smaller than in *Neosaimiri*.

The molar structure is very different from each other. On  $M_1$  of *Neosaimiri*, the relative position of the protoconid and the metaconid is the same as that of  $P_4$ , but the paraconid of  $M_1$ , is a little appressed to the protoconid than in  $P_4$  so that the trigonid is narrower antero-posteriorly in  $M_1$ , than in  $P_4$ . On the contrary, in the present form, the metaconid is situated more lingually on  $M_1$  than on  $P_4$  making the trigonid of  $M_1$  of this form wider transversely than that of *Neosaimiri*. On the talonid of  $M_1$  of *Neosaimiri*, the hypoconulid is not differentiated, and the hypoconid and the entoconid are bound by the postcristid which is slightly curved posteriorly. On the other hand, on the talonid of  $M_1$  of the present specimen, the hypoconulid is clearly differentiated

postero-buccally to the entoconid, and the posthypocristid runs postero-lingually from the more buccally situated hypoconid towards the hypoconulid. The buccally situated hypoconid and the postero-lingually running posthypocristid (= postcristid) make the talonid basin wider both transversely and antero-posteriorly than in *Neosaimiri*. Posterior to the entoconid and lingual to the hypoconulid is a small notch on the present specimen, which is not seen in *Neosaimiri* and extant *Saimiri*. On *Neosaimiri*, the buccal cingulum is greatly developed buccal to the cristid obliqua, or the junction between the trigonid and the talonid, but this structure is not so well developed in the present specimen as is seen in *Neosaimiri*.

On M<sub>2</sub> of the present specimen, the hypoconid is more lingually situated than on M<sub>1</sub>, so that the taloned of M<sub>2</sub> is much more narrower transversely than in M<sub>1</sub>, approaching the width of the trigonid as in *Neosaimiri*. The postero-lingual notch is also observable. This notch is observable on M<sub>1,s</sub> and M<sub>2,s</sub> on both right and left rami of the mandible of the present specimen.

Discussion: The present specimen is characterized by the similar size and morphology of the dentition and the mandible with those of the middle Miocene *Neosaimiri* and extant *Saimiri*. Especially, the resemblance in the premolar structure between the present specimen and the contemporary *Neosaimiri* suggests the close phylogenetic tie between the two forms.

But the molar structure is very different from each other. On M<sub>1</sub> of the present form, the talonid is wider transversely than the trigonid, as is seen in most of the early Tertiary insectivores and prosimian primates, whereas in *Neosaimiri* the width of the talonid is essentially the same as that of the trigonid. On M<sub>2</sub> of both forms, the width of the talonid approaches to that of the trigonid, as is seen in the early Tertiary primitive mammals. The difference in talonid structure on M<sub>1</sub> between them warrants the separation at the generic level of the present specimen from the genus *Neosaimiri*.

The present form is also characterized by the presence of a small notch on the postero-lingual corner of the crown. This kind of notch is not seen on *Neosaimiri*, nor on extant *Saimiri*. At present, it is not clear whether the presence of a notch might be regarded as individual morphological variation, or a derived character bearing the phylogenetical meaning.

When he described *Neosaimiri*, SIRTON (1951) demonstrated the close relationship between the Miocene *Neosaimiri* and extant *Saimiri*. We agree with the close tie between these two forms, but it is not clear whether *Neosaimiri* might have given rise to *Saimiri* or not. The present form might be a candidate for the possible ancestor of the extant *Saimiri*. In 1989-field season, new specimens of *Neosaimiri* have been discovered. These materials will be described separately. Until the full description and discussion of these new materials will be present, we cannot give our final conclusion about the phylogenetic origin of the extant *Saimiri*.

## REFERENCE

- SIRTON, R. A., 1951. Cebooid Monkeys from Miocene of Colombia. *Univ. Calif. Publ. Bull. Dept. Geol. Sci.* **28**: 315-356.